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THE STUDY OF SERIES SLOTTED ARRAY DESIGN ON HOLLOW PYRAMIDAL MICROWAVE ABSORBER

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work.

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ABSTRACT

Microwave absorbers used in the anechoic chamber are good in the term of eliminating the unwanted reflected signal as the signal can interrupt and scramble the experimental measurements. The creation of a new form of microwave absorber in anechoic chamber was investigated to improve anechoic chamber performance. This project shows the absorption performance on the hollow pyramidal microwave absorber by using the slotted array design. The basic concepts of slot waveguide antenna in conjunction with the theory of microwave absorber are used in this paper. Hence, the latest method for designing the new type of microwave absorber will be introduced. The simulation and analysis was performed by using computer simulation technology (CST) software. The wave frequency of 1 GHz to 12 GHz has been chosen to predict the absorbent performance. The new series slotted array design of the microwave absorber was analysed and compared in term of absorption performance. From the study, the design of hollow pyramidal absorber using 12 GHz which has the smallest slot size is the best microwave absorber design. This is shown by the pyramidal absorber with smallest slot size has the highest level of maximum reflectivity about -62.2469 dB among the other two designs. Lastly, series slotted array proved to give the best performance for the application in an anechoic chamber.

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